Solid Waste Utilization Plan

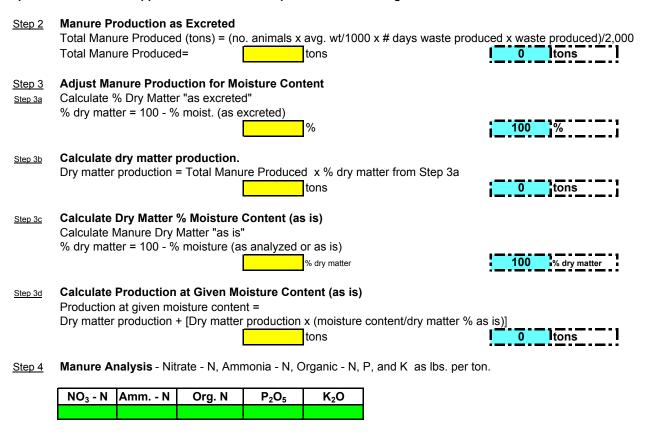
For:
Office:
Assisted by:

Step 1

Resource Inventory

= no. of animals
= avg. weight (lbs.)
= no. of days/yr. waste produced
= waste produced - lb/day/1000# (at 87 - 88% moisture)
= as excreted moisture content (from Chapter 4 tables)
= moisture content (%) from manure analysis

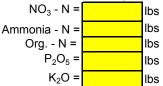
Steps 2 - 3d are used to approximate total manure produced when using as-excreted values.

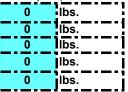


If the lab analysis for P and K are not expressed as the oxidized forms ( $P_2O_5$  and  $K_2O$ ) then convert using:  $P_2O_5 = P \times 2.29$   $K_2O = K \times 1.21$ 

## Step 5a Total Nutrients Produced

Total Nutrients Produced = lbs nutrient/ton (from Step 4) x tons manure produced (from Step 3d)

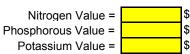




## Step 5b Economic Value of Nutrients Produced (assumes 45% mineralization rate of organic nitrogen)

Economic Value = Cost (\$) per lb of nutrient if commercially applied







# Step 6 Plant Available Nutrients (availability due to mineralization)

(multiply the mineralization percentages by the values from Step 4)

0.0	lbs./ton
0.0	lbs./ton

Mineralization values assume annual applications on the same site. If a one time, application, modify values as per instruction in Table 11-9, AWMFH.

Step 7 Plant Available Nutrients (availability after application losses)

Application Method	Soil Conditions	Days to Incorporation

Percentage of ammonia and mineralized organic nitrogen retained based upon described conditions.

	%	Step 6 Nitro	gen value x	Percentage	Retained =
	•			lbs./ton	

Step 8 Pounds of available nutrients per ton of waste (after mineralization and application losses)

(artor minoranzation and approati					
Nitrogen	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O			

Nitrogen	P <sub>2</sub> O <sub>5</sub>	K₂O
0	0	0

### Step 9 Nutrients Required By Crop

**Required Crop Inventory** 

Crop	Realistic Yield Goal	Acres

**Required Soil Analysis Inventory** 

PPM NO <sub>3</sub> -N	PPM - P	PPM - K	% OM

Step 10 Crop #1 Nutrient Requirements

Crop	Nutrient	Requirement (lb./ac)
0	Nitrogen	
0	$P_2O_5$	
0	K <sub>2</sub> O	

**Crop #2 Nutrient Requirements** 

Crop	Nutrient	Requirement (lb./ac)
0	Nitrogen	
0	$P_2O_5$	
0	K₂O	

**Crop #3 Nutrient Requirements** 

Grop #6 Hatriont Requirements			
Crop	Nutrient	Requirement (lb./ac)	
0	Nitrogen		
0	$P_2O_5$		
0	K₂O		

## Step 11 Crop Nitrogen Requirement After Nitrogen Credit from Irrigation Water (Crop #1)

2.7 x PPM NO<sub>3</sub><sup>-</sup> x net acre-feet water applied = lbs. N/acre (insure conversion of acre-inches to acre-ft)

3		,	,
=ppm NO <sub>3</sub> -			
=net inches water applie	ed		
lbs. N/Acre =	lbs	s./ac	0 lbs./ac.
Adjusted Crop #1 Nitrogen Req.=	lbs	s./ton	0 lbs./ac.
(Crop #1 Nitrogen Requirement (fro	m step 10) - N	from irrigation wate	r)

Crop Nitrogen Requirement After Nitrogen Credit from Irrigation Water (Crop #2)

Adjusted Crop #2 Nitrogen Req.= | Ibs./ton | No Crop Ibs./ac. (Crop #2 Nitrogen Requirement (from step 10) - N from irrigation water)

Crop Nitrogen Requirement After Nitrogen Credit from Irrigation Water (Crop #3)

Adjusted Crop #3 Nitrogen Req.= | Ibs./ton | No Crop Ibs./ac. |

(Crop #3 Nitrogen Requirement (from step 10) - N from irrigation water)

#### Step 12 Crop Nitrogen Requirement After Nitrogen Credit from Previous Legume (Crop #1) Use only if legume part of rotation since last soil test. If no legume, use 0 (zero). Above 6,000 feet elevation, use 30 lbs/acre of symbiotically fixed nitrogen Below 6,000 feet elevation, use 40 lbs/acre of symbiotically fixed nitrogen lbs./ac lbs. N/Acre fixed = lbs./ac Adjusted Crop #1 Nitrogen Req.= lbs./ton lbs./ac (Crop #1 Nitrogen Requirement (from step 11) - N from legume fixation Crop Nitrogen Requirement After Nitrogen Credit from Previous Legume (Crop #2) Adjusted Crop #2 Nitrogen Reg.= lbs./ton No Crop Ibs./ac (Crop #2 Nitrogen Requirement (from step 11) - N from legume fixation Crop Nitrogen Requirement After Nitrogen Credit from Previous Legume (Crop #3) No Crop Ibs./ac Adjusted Crop #3 Nitrogen Reg.= lbs./ton (Crop #3 Nitrogen Requirement (from step 11) - N from legume fixation Calculate Nitrogen-based Manure Application Rates (Crop #1) Step 13 Crop Nitrogen Needs = lbs./ac lbs./ac Available N in Manure = lbs./ton lbs./ton (from step 8) N-based Application Rate = Crop N Needs (lbs/ac) x Available N (tons/lb.) = #DIV/0! tons/ac tons/ac Calculate Nitrogen-based Manure Application Rates (Crop #2) Crop Nitrogen Needs = No Crop Ibs./ac lbs./ac Available N in Manure = lbs./ton No Crop lbs./ton N-based Application Rate = Crop N Needs (lbs/ac) x Available N (tons/lb.) = tons/ac No Crop tons/ac Calculate Nitrogen-based Manure Application Rates (Crop #3) Crop Nitrogen Needs = lbs./ac No Crop Ibs./ac Available N in Manure = lbs./ton No Crop lbs./ton N-based Application Rate = Crop N Needs (lbs/ac) x Available N (tons/lb.) = tons/ac No Crop tons/ac Calculate Phosphorous-based Manure Application Rates (Crop #1) Step 14 Crop Phosphorous Needs = lbs./ac lbs./ac Available $P_2O_5$ in Manure = 0 lbs./ton lbs./ton $P_2O_5$ -based App. Rate = Crop $P_2O_5$ Needs (lbs/ac) x Avail. $P_2O_5$ (tons/lb.) = #DIV/0! tons/ac tons/ac Calculate Phosphorous-based Manure Application Rates (Crop #2) No Crop Ibs./ac Crop Phosphorous Needs = lbs./ac Available P<sub>2</sub>O<sub>5</sub> in Manure = lbs./ton No Crop | Ibs./ton $P_2O_5$ -based App. Rate = Crop $P_2O_5$ Needs (lbs/ac) x Avail. $P_2O_5$ (tons/lb.) = tons/ac No Crop tons/ac Calculate Phosphorous-based Manure Application Rates (Crop #3) Crop Phosphorous Needs = No Crop | lbs./ac lbs./ac Available $P_2O_5$ in Manure = lbs./ton No Crop Ibs./ton $P_2O_5$ -based App. Rate = Crop $P_2O_5$ Needs (lbs/ac) x Avail. $P_2O_5$ (tons/lb.) = tons/ac No Crop tons/ac

#### Calculate Potassium-based Manure Application Rates (Crop #1) Step 15 Crop Potassium Needs = lbs./ac lbs./ac. (from step 10) Available K2O in Manure = lbs./ton lbs./ton (from step 8) K2O-based App. Rate = Crop K2O Needs (lbs./ac) x Avail. K2O (tons/lb.) = #DIV/0! tons/ac tons/ac Calculate Potassium-based Manure Application Rates (Crop #2) No Crop Ibs./ac Crop Potassium Needs = lbs./ac Available K2O in Manure = No Crop lbs./ton lbs./ton K2O-based App. Rate = Crop K2O Needs (lbs./ac) x Avail. K2O (tons/lb.) = tons/ac No Crop tons/ac Calculate Potassium-based Manure Application Rates (Crop #3) Crop Potassium Needs = No Crop Ibs./ac lbs./ac Available K<sub>2</sub>O in Manure = lbs./ton No Crop Ibs./ton K2O-based App. Rate = Crop K2O Needs (lbs./ac) x Avail. K2O (tons/lb.) = tons/ac No Crop tons/ac Calculate Approximate Acres of Crop #1 Needed Step 16 Total Manure Produced (from Step 3d) (tons)/Application Rate (from Step 13, 14 or 15) #DIV/0! acres Nitrogen-based = Tons Manure (Step 3d)/N-based App. Rate (Step 13) = #DIV/0! acres Phosphorous-based = Tons Manure (Step 3d)/P-based App. Rate (Step 14) = #DIV/0! acres Potassium-based = Tons Manure (Step 3d)/K-based App. Rate (Step 15) = Nitrogen-based = acres Phosphorous-based= acres Potassium-based = acres Calculate Approximate Acres of Crop #2 Needed Total Manure Produced (from Step 3d) (tons)/Application Rate (from Step 13, 14 or 15) No Crop acres Nitrogen-based = Tons Manure (Step 3d)/N-based App. Rate (Step 13) = Phosphorous-based = Tons Manure (Step 3d)/P-based App. Rate (Step 14) = No Crop acres Potassium-based = Tons Manure (Step 3d)/K-based App. Rate (Step 15) = No Crop acres Nitrogen-based = acres Phosphorous-based= acres Potassium-based = acres Calculate Approximate Acres of Crop #3 Needed Total Manure Produced (from Step 3d) (tons)/Application Rate (from Step 13, 14 or 15) Nitrogen-based = Tons Manure (Step 3d)/N-based App. Rate (Step 13) = No Crop acres Phosphorous-based = Tons Manure (Step 3d)/P-based App. Rate (Step 14) = No Crop acres Potassium-based = Tons Manure (Step 3d)/K-based App. Rate (Step 15) = No Crop acres Nitrogen-based =

acres

acres

acres

Phosphorous-based=

Potassium-based =

Step 17 Provided by	Spreader Calibration (density of r = length of spreader (ft)	manure must be kno	own) and Loads per Acre	by Crop
producer	= width of spreader (ft)		http://www.ext.colostate	7
producer	= depth of spreader (ft)		mtp.//www.oxt.coroctate	
	= density of manure (lbs	/cu*ft)		
	density of manare (last	roa ity		
FOTG	Vol. capacity of spreader = length	x width x depth =		
Practice 313	Vol. of Spreader =	cu ft		N/A cu ft
Waste Storage	Convert to lbs. = volume x density of	f manure (lbs/cu ft) =		
Structure		lbs/load		N/A Ibs/load
		tons/load		N/A tons/load
	Loads/acre (Crop #1) = applicatio	n rate(tons/acre) x l	oads/ton (spreader capa	city) =
	Nitrogen-based =	loads/ac	e	N/A loads/acre
	Phosphorous-based=	loads/ac	re ·	N/A loads/acre
	Potassium-based =	loads/aci	re	N/A loads/acre
	•			
	Loads/acre (Crop #2) = applicatio	n rate(tons/acre) x l	oads/ton (spreader capa	city) =
	Nitrogen-based =	loads/aci		N/A loads/acre
	Phosphorous-based=	loads/ac	re	N/A loads/acre
	Potassium-based =	loads/aci	re.	N/A loads/acre
	i otacolam sacca	.00.00		
	Loads/acre (Crop #3) = applicatio	n rate(tons/acre) x l	oads/ton (spreader capa	city) =
	Nitrogen-based =	loads/aci	re ·	N/A loads/acre
	Phosphorous-based=	loads/aci	re	N/A loads/acre
	Potassium-based =	loads/aci	re	N/A loads/acre

<u>Step 18</u>	Recommended Timing of Application
Step 19	Operation and Maintenance
Step 20	Additional Specification and Notes
I have reviewed the attached Waste Utilization Plan, and agree to apply as specified:	
	Producer Signature
	Data